

Hypothesis Concerning Havana Syndrome – Magnetostrictive Ultrasonic Generation Intended for Environment Mapping

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Introduction

A great deal of fear and confusion have been generated surrounding the concept of “Havana Syndrome,” a condition in which individuals working in embassies have reported loss of balance, nausea and the inability to concentrate. Many have suffered from permanent impairment of the inner ear and hearing loss.

Unfortunately, the government did not disclose all that it knew concerning the problem and suggested that the syndrome was due to the use of a “weapon.” Although the source of the problem was a foreign adversary, the medical symptoms inflicted upon personnel were not intentional in the opinion of this author.

Abstract

When a person attempts to purloin merchandise from any department store and when that merchandise has an anti-theft tag upon it, a mechanism at the exit sets off an alarm. Most people assume that these are magnetometers, but they are absolutely not magnetometers. These retail anti-theft mechanisms which have been commonplace for something like a half century are much simpler than this.

These mechanisms use something called magnetostriction in order to cause a small metallic filament within a plastic pouch to generate an ultrasonic sound which can be heard by a microphone in the mechanism. To achieve this, the mechanism only needs to emit RF energy at a particular frequency and intensity.

Although small, thin filaments are ideal when one wants to generate ultrasonic sound, the magnetostrictive effect can be achieved with any metallic filament. An adversary can direct high-intensity RF energy toward the interior of a building in order to turn commonplace items into ultrasonic generators. For example, the coil springs of a person’s mattress, the antenna in a wireless router, a staple holding together some papers on a desk and other metallic objects can all be turned into ultrasonic resonators.

An adversary wishing to gain information concerning the layout of a secure building such as an embassy can easily dump large quantities of RF into a building with a microwave dish and create a three-dimensional map of the interior of the building using dynamic listening posts (such as quad copters) which can compare the audible sound from different perspectives outside of the secure building. This approach can also enable an adversary to extrapolate when there is human activity within a room, the dimensions of rooms and the likely purpose of rooms. This has been demonstrated to be

sufficient information to enable the security of an embassy to be compromised catastrophically. (Since the original writing of this article, the U.S. Embassy in Yemen was compromised using this type of intelligence in November 2021.)

Conclusion

The health effects of such intense ultrasonic sounds on human beings are well-understood. It is easy to understand why personnel experienced worsening symptoms at night as the coil springs in their mattresses were the very thing, in most cases, generating the sound which sickened them.